CCS-UNet: a cross-channel spatial attention model for accurate retinal vessel segmentation: supplement

YONG-FEI ZHU,[†] XIANG XU,[†] XUE-DIAN ZHANG, AND MIN-SHAN JIANG* [ID]

Shanghai Key Laboratory of Contemporary Optics System, College of Optical-Electrical and Computer Engineering, University of Shanghai for Science and Technology, Shanghai 200093, China
[†]These authors contributed equally to this work.
*jiangmsc@gmail.com

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Table S1. List of Variables.

Symbol	Definition
F	Input feature map of the CCS module
F_{mid}	Feature map responsible for encoding horizontal and vertical spatial information
F^H	Spatial feature encoding along the vertical direction
F^W	Spatial feature encoding along the horizontal direction
F_C	The output feature map of the first branch of the CCS module
F_S	The output feature map of the second branch of the CCS module
F_{out}	The final output feature map of the CCS module
$F(i,j)$	i,j are the indexes of height and width in the input feature map F respectively
$F_C(i,j)$	i,j are the indexes of height and width in the output feature map of the first branch of the CCS module
F_S^{MP}	The feature code obtained from the input feature map F after maximum pooling in the channel direction
F_S^{AP}	The feature code obtained from the input feature map F after averaging pooling in the channel direction
G^H	Attention weighting map along the vertical direction
G^W	Attention weighting map along the horizontal direction
Z^H	Coding feature map for aggregating features along the vertical direction
Z^W	Coding feature map for aggregating features along the horizontal direction
$Z_c^H(h)$	The mathematical representation Z^H of of the c-th channel at a given height h
$Z_c^W(w)$	The mathematical representation Z^W of of the c-th channel at a given width w
$X_c(h,i)$	Denotes the row vector of input features on a given channel c and height h
$X_c(j,w)$	Denotes the column vector of input features on a given channel c and width w
$M_S(\cdot)$	Operations used to obtain attention weight maps for cross-channel information